

## SUBTERRANEAN CRUSTACEA FROM KWANTUNG<sup>1</sup>

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THREE FIGURES

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During a limnological tour to Southern Manchoukuo in September 1933, Prof. T. Kawamura and Mr. M. Yamasaki collected some crustaceans from the subterranean waters in Kwantung Province. The collection consisted of three species, the two of which are true troglomorphic forms and of great importance for the biogeography of inland waters of Eastern Asia, especially for the consideration of the origin of the subterranean fauna of Japan (cf. Chappuis 1927). I offer my best thanks to Prof. T. Kawamura for his kind allowance to study the interesting collection.

### AMPHIPODA

#### Gammaridæ

##### 1. *Pseudocrangonyx asiaticus* sp. nov.

(Figs. 1 & 2)

*Female*: Length 8 mm. Body white, without any trace of pigment. Eyes entirely absent. First antenna is a little shorter than half the body length; the first joint of the peduncle rather robust, the second and third joints combined nearly as long as the first; flagellum composed of 19-joints and with slender calceoli; accessory flagellum very small, 2-jointed, its first joint being as long as the first joint of the main flagellum, the second joint very minute. Second antenna is a little longer than half of the whole length of the first antenna; the

<sup>1</sup> Contribution from the Ôtsu Hydrobiological Station, Kyoto Imperial University.

penultimate joint of the peduncle slightly longer than the ultimate joint; flagellum a little longer than either of these joints of the peduncle and composed of 8-joints.

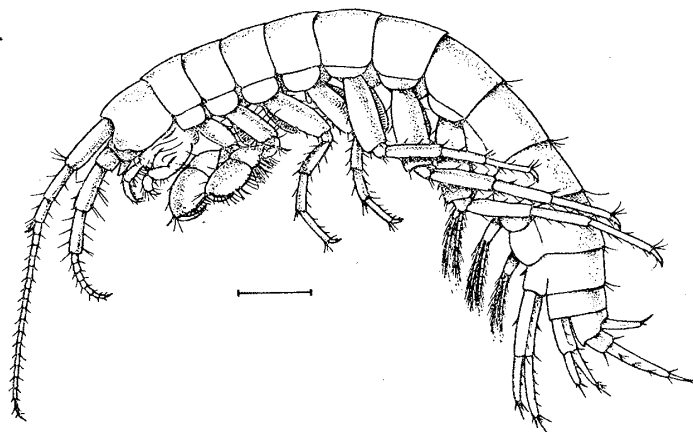


Fig. 1.—*Pseudocrangonyx asiaticus* sp. nov. ♀

Two pairs of gnathopods are nearly similar in shape, but the first is somewhat stouter than the second; the fifth joint of both limbs has 1-3 serrated spines near the terminal end of the hind margin. The second joint of the third to fifth pereopods are rather slender, not expanded. Side-plates 1-4 are quadrate, with the angles rounded.

Epimeral plates of the pleon somites 1-3 are similar in shape, the front and hind lower angles rounded, the hind margin armed with one large and 5 or 6 slenderer spines; the lower margin armed with 2 spines in the second somite and 3 in the third somite; none of such spines are seen in the first.

The first and second uropods extend backwards beyond the apex of the telson, the first much extending further behind than the second. First uropod: peduncle a little shorter than the inner ramus which has 4 stout spines on the inner margin and 4 long setae on the outer margin near the base; the outer ramus is about  $\frac{3}{4}$  as long as the inner. Second uropod: peduncle much shorter than the inner ramus which is longer than the outer. Third uropod is long, with a single 2-jointed ramus; the proximal joint four times as long as the peduncle; the second joint slender, a little longer than  $\frac{1}{4}$  of the first joint, armed with 4-5 long setae on the apex. Telson slightly longer than wide, lateral margins round, the apex deeply emarginate, forming two lobes, each apex of which is armed with one long stout spine and two very small spines respectively.

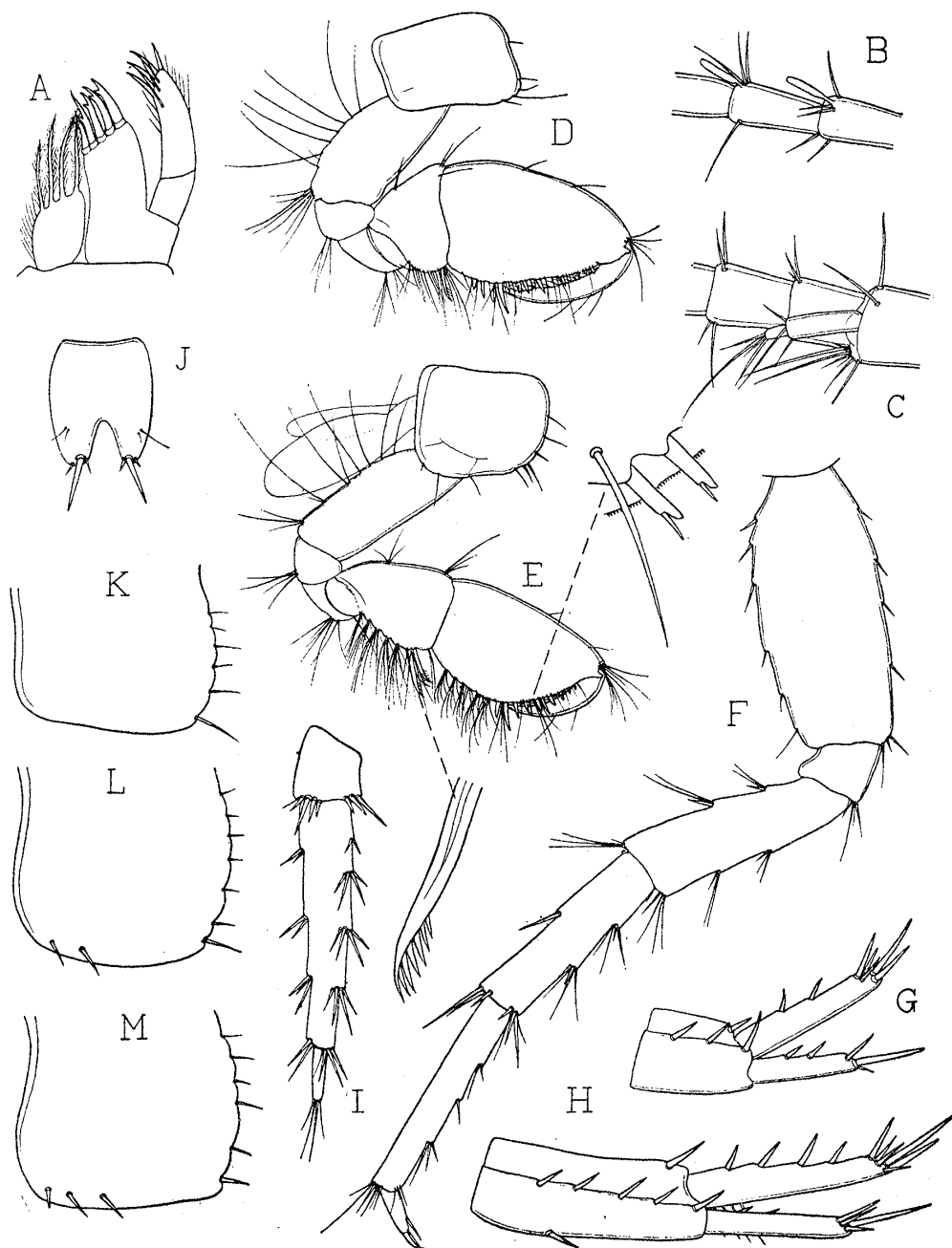


Fig. 2.—*Pseudocrangonyx asiaticus* sp. nov.

A, first maxilla. B, distal part of first antenna. C, accessory flagellum of first antenna. D and E, first and second gnathopods of female. F, last pereopod of female. G, second uropod. H, first uropod. I, third uropod. J, telson. K, L and M, epimeral plates of first, second and third pleon somites.

Mouth-parts resemble very much those of *Pseudocrangonyx shikokunis* Akatsuka et Komai. First maxilla: the inner lobe is provided with 4 or 5 apical setæ, the outer lobe with 5 serrated spines; palp surmounted with 4 spines and 3 setæ on the apex.

Gill-lamellæ are present on the thoracic limbs 2-5 (gnathopod 2, pereopods 3-6). Besides these so-called "coxal gills" (*sensu* Schellenberg 1930), there are a short papilla-like so-called "sternal gills" on the thoracic sternites 2-5. The arrangement of these gills and oöstegites is as follows:

Somite	Oöstegite	Coxal gill	Sternal gill
I	0 - 0	0 - 0	0
II	1 - 1	1 - 1	1
III	1 - 1	1 - 1	1
IV	1 - 1	1 - 1	1
V	1 - 1	1 - 1	1
VI	0 - 0	1 - 1	0
VII	0 - 0	0 - 0	0

*Male*: Length 8 mm. General form resembles very much the female, except the shape of gnathopods which are much stouter than those of the female. The first antenna is shorter than half of the body length, with the 19-jointed flagellum; second antenna with 8-jointed flagellum.

*Locality*: A rheocene at Êrh-tao-ho-tzu (二道河子) in Ying-cheng-tzu (營城子), Kwantung, S. Manchoukuo; 5. IX. 1930, 10 specimens, coll. by T. Kawamura and M. Yamasaki.

*Remarks*: This species belongs no doubt to the genus *Pseudocrangonyx* Akatsuka and Komai (1922) in having a distinct second joint in the third uropod, and differs markedly from the hitherto known species of this genus by its considerably large terminal joint of the third uropod, the deeply emarginated telson, and by the peculiar characters of the first and second uropods which extend much behind the level of the telson. The outer rami of the telson of *P. asiaticus* are much longer than those of the other known species. *P. asiaticus* is much more closely allied to *P. yezonis* than the other two species, *P. shikokunis* and *P. kyotonis*.

The genus *Pseudocrangonyx*, which has hitherto been known from Japanese Islands only, is the representative of the series of *Niphargus-Crangonyx*, the common subterranean genera in the Palæarctic Region. From the biogeographical and morphological standpoints, it is supposed

that the Japanese forms of *Pseudocrangonyx* may probably have been derived from such a continental form as *P. asiaticus* described above and may have differentiated in Japan into these three species, namely, *shikokunis*, *kyotonis* and *yezonis*.

## ISOPODA

## Asellidæ

2. *Asellus aquaticus* Linné

From a well in the ground of the butchery at the town of Pi-tzu-wō (貔子窩), a male specimen of this ubiquitous species of 8 mm long was collected on September 6th, together with a few individuals of a blind copepod (see below). No peculiar difference is recognized in these specimens of *Asellus* compared with the description and figures of the typical form of *A. aquaticus* given by G. O. Sars (1899).

## COPEPODA

## Cyclopidae

3. *Eucyclops (Eucyclops) nagasaki* Uéno

*Localities*: A well in the ground of the butchery at the town of Pi-tzu-wō, 6. IX. 1933, water temperature 16°C; a well at the west street of the same town, 6. IX. 1933, water temp. 13°C.

*Remarks*: The specimens from both the wells agree very well with the type specimen from a subterranean pool in Shinano, Central Japan (Uéno 1934).

Length of body, 900–1100  $\mu$  in ♀; 850  $\mu$  in ♂. Body white; eye entirely absent. First antenna 12-jointed, without hyaline membrane on the last joint, as in the type specimen. The endopod of the fourth limb is 48:22  $\mu$ , with 2 apical spines of 53:38  $\mu$ . Spine-formula = 3.4.4.3; seta-formula = 5.5.5.5. The serræ on the outer margins of both rami of the furca are only minutely

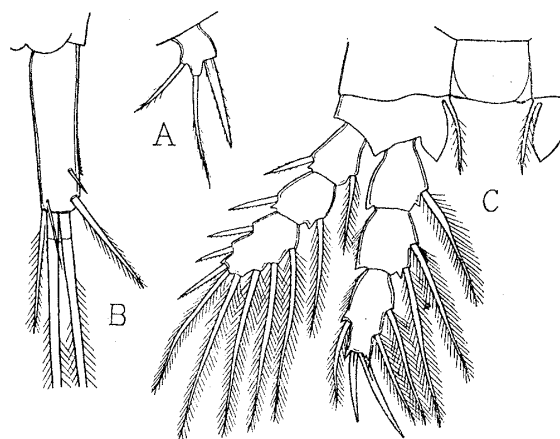


Fig. 3.—*Eucyclops nagasaki* Uéno, Hishika, Kwantung. A, fifth limb. B, furca. C, fourth limb of female.

developed, having a few denticles close to the lateral spine. The relative length of the furcal setæ is, from the outer to the inner, as 77 : 300 : 440 : 102  $\mu$ .

#### REFERENCES

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